Distributed generator sizing via evolutionary particle swarm optimization

Abstract

With the existence of Distribution Generator (DG) in distribution network, the power losses in the network can be minimized by resizing the power output of each DG units. In line with this objective, most researchers have concentrated on the optimization technique to regulate the DG.s output to compute its optimal size. In this paper, the concept of Evolutionary Particle Swarm Optimization (EPSO) method is implemented in sizing the DG units. By applying the concept of Evolutionary Programming (EP) in Particle Swarm Optimization (PSO), it will allow the only successful particles to move toward the optimal value and make the process of convergence become faster. The algorithm has been tested in 33 bus distribution system with 3 units of DG that operate in PV mode. Its performance was compared with the performance when using the traditional PSO. In terms of power loss reduction and voltage profile, the EPSO gives similar performance as PSO. Morever, it requires less number of iteration to converge. Thus, EPSO can reach the optimal value in shorter time while maintaining the traditional PSO.s performance.